Local knowledge about how ecosystem services and biodiversity conservation are related to trees in silvopastoral systems

FunciTree Final Conference

Trondheim, Mali May 25th 2013

Ditter MOSQUERA, Carlos CERDAN
Cristobal VILLANUEVA, Isabel GUTIERREZ
Fabrice DE CLERCK

Alexandre ICKOWICZ, Pierre CLINQUART
Dalia SANCHEZ, Régis PELTIER,
Nicole SIBELET, David BARTON

Outline

- Why did FUNCiTREE study local knowledge?
- How did FUNCiTREE study local knowledge?
- What are the main results FUNCiTREE found?
- How useful (or not) results are?

Starting points

- **Local people know best**
  - Local people have some useful knowledge that is complementary to science (e.g. phenology of tree species). This can be more efficiently and effectively used in design of AFS than attempting to collect the same information scientifically.

- **Scientists know best**
  - Local people have gaps in knowledge with respect to the role of trees in the provision of ecosystem services. Identifying and then targeting these gaps in FUNCiTREE outputs will make the outputs more effective than designing them without evaluating what people already know.

- **Talk the talk**
  - Analysis of how local people understand and communicate their knowledge can improve the design and effectiveness of FUNCiTREE outputs.

- **A local voice**
  - Documentation and analysis of what local people know can ensure that local knowledge is used to plan FUNCiTREE activities and so improve their local relevance.

- **What is transferable?**
  - Comparative analysis of local knowledge across FUNCiTREE regions will allow a rigorous analysis within and between countries of the degree of transferability of knowledge about the role of trees in ecosystem service provision and livestock production, enabling more effective targeting of future research and development initiatives.

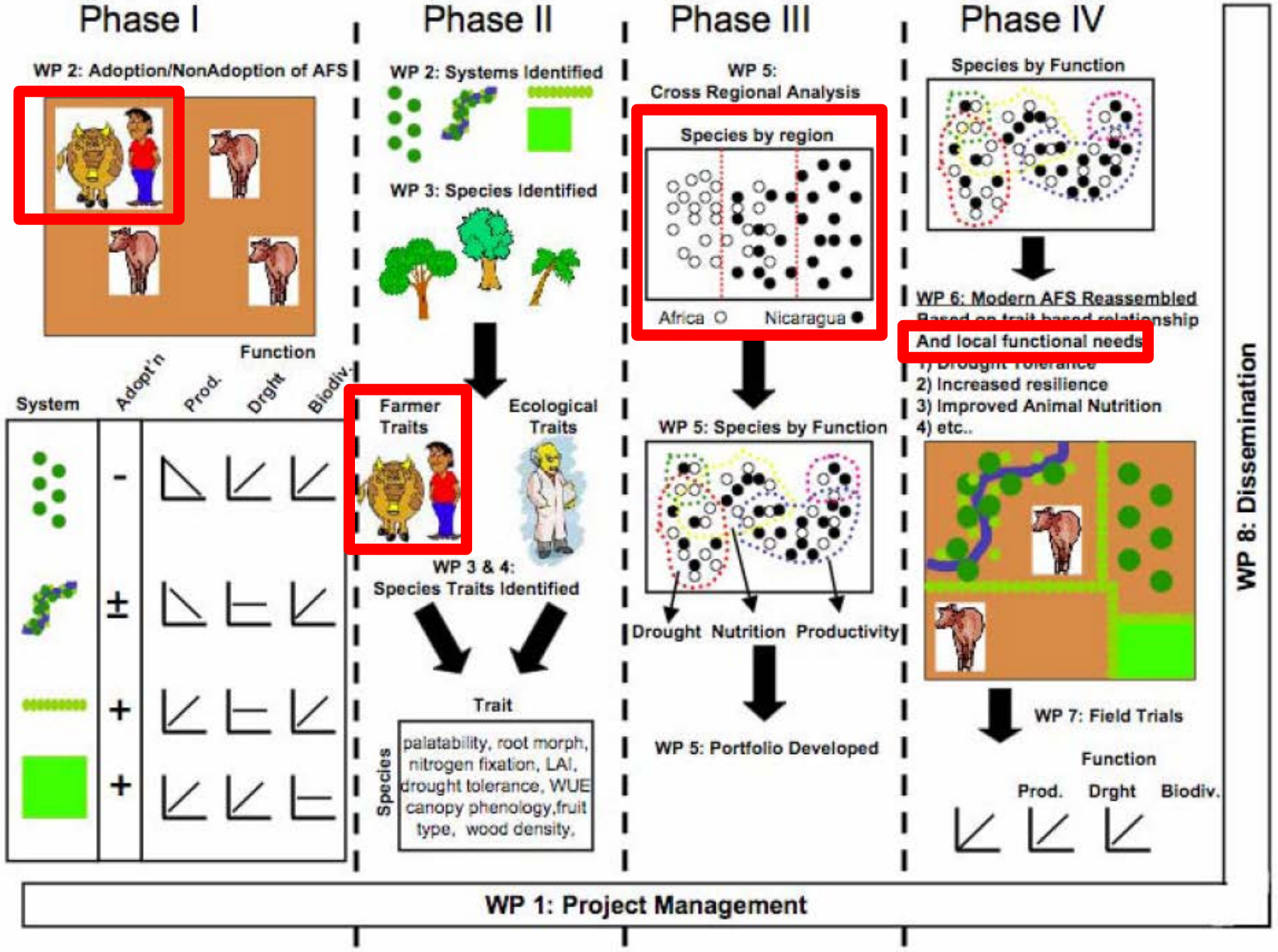


Illustration of Barton (2009)

Local knowledge within FUNCiTREE

- **WP3 Farmers perception of AFS tree species and their traits**
  - Task 3.2 Local knowledge of species traits (use of AKT)
- **WP2**
  - What are the critical ecosystem functions that farmers desire?
  - What are farmers hoping to get out of AFS implemented on their farms?
  - Task 2.1 Farmers production goals (Community capitals framework)
- **WP6**
  - Task 6.4 Causal network using Bayesian belief network to determine cause-effect relationships with predictive models
- **WP5** Cross regional analysis of Species, traits and classifications

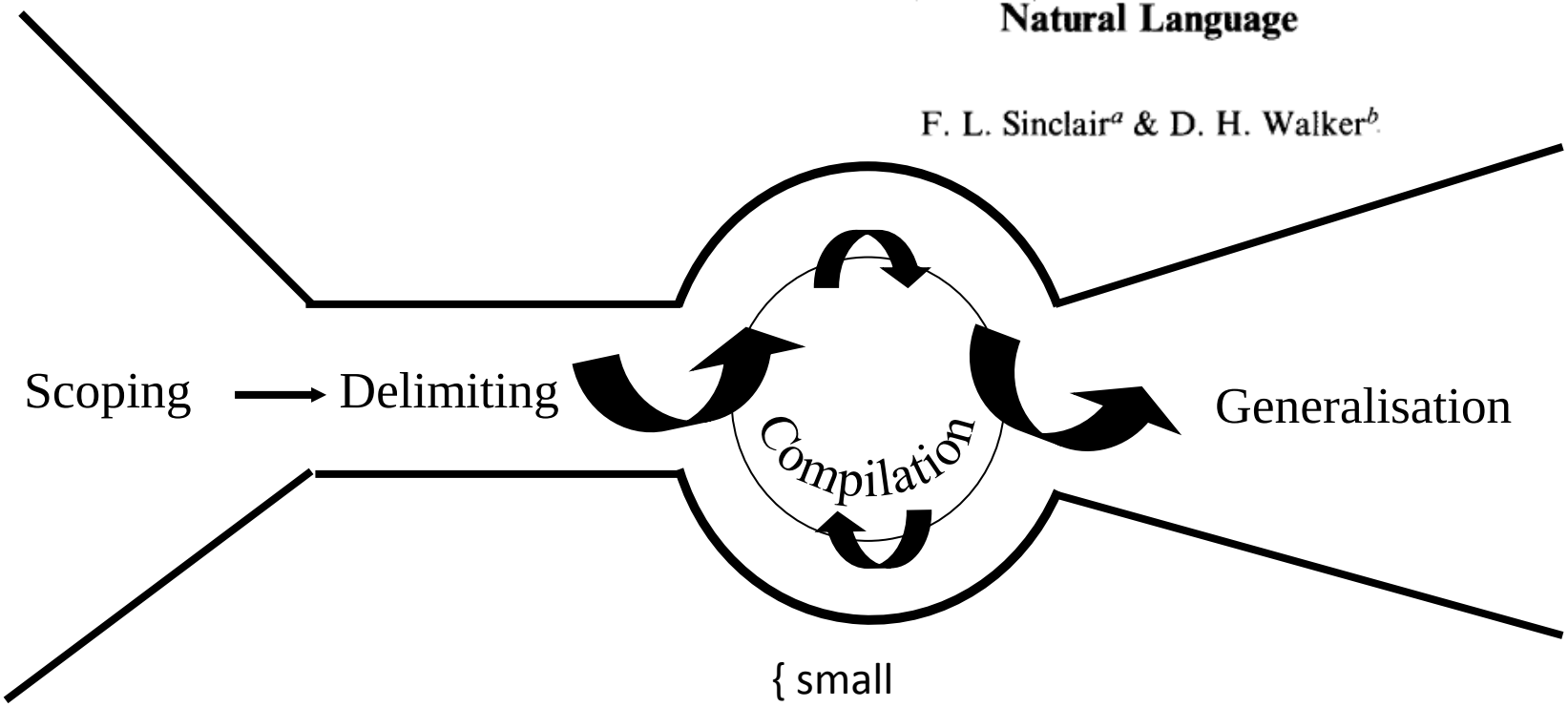
ELSEVIER
Agricultural Systems, Vol. 56, No. 3, pp. 341–363, 1998

PII: S0308-521X(97)00048-6 0308-521X/98 $19.00 + 0.00

AKT methodology

Acquiring Qualitative Knowledge About Complex Agroecosystems. Part 1: Representation as Natural Language

F. L. Sinclair[a] & D. H. Walker[b]



Secondary data
Key informants
Reconnaissance

Sample { small
{ stratified
{ purposive
Semi-structured interviews
Iterative, triangulated
Qualitative

Sample { large
{ stratified
{ random
Questionnaire
Quantitative analysis

http://akt.bangor.ac.uk/References.php?menu=4&catid=5371&subid=0#publish

Text only version | Jump to Page Content | Bangor Home

PRIFYSGOL BANGOR UNIVERSITY

SEARCH

The Agroecological Knowledge Toolkit

- Home Page
- Who's using AKT?
- News
- Software
- Manual
- Technical issues
- References and Readings
- Contacts, Links and Questions

»Bangor Home »The Agroecological Knowledge Toolkit »References and Readings

AKT5 Reading materials

- Knowledge bases for published articles
- Key references for AKT5
- Guide book

Knowledge bases for published articles

Waliszewski, W.S., Oppong, S., Hall, J.B., and Sinclair, F.L. (2005) Implications of local knowledge of the ecology of a wild super sweetener for its domestication and commercialisation in west and central Africa . Economic Botany.

Also see the Ego guide book

Thaumatococcus daniellii (Benn.)Benth. a rhizomatous herb with a natural range extending through the Guineo-Congolian rain forest . It is a robust forest herb, usually forming extensive colonies with petioles to 3 m long arising from the subterranean rhizome. It has long been used as a non timber forest with stems being used to produce mats and leaves used for roofing aps it is most well known as a food wrapper in markets of the region .

akt.bangor.ac.uk

A total of 429 tree Species!

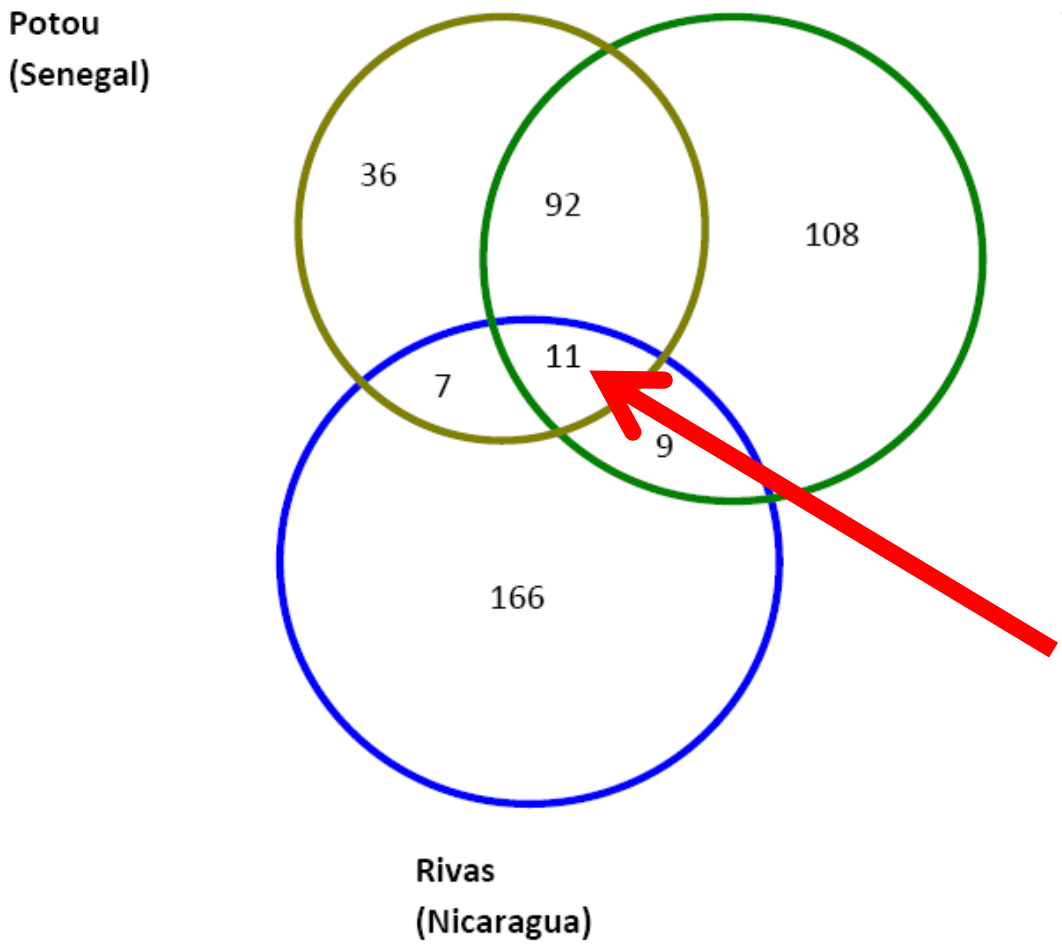


Illustration of Ickowicz (2010)

No.	Species Name
1	*Azadirachta indica*
2	*Calotropis procera*
3	*Citrus limon*
4	*Gliricidia sepium*
5	*Jatropha curcas*
6	*Mangifera indica*
7	*Prosopis juliflora*
8	*Psidium guajava*
9	*Tamarindus indica*
10	*Tecoma stans*
11	*Ximenia Americana*

Increasing our knowledge regarding the complexity of local knowledge

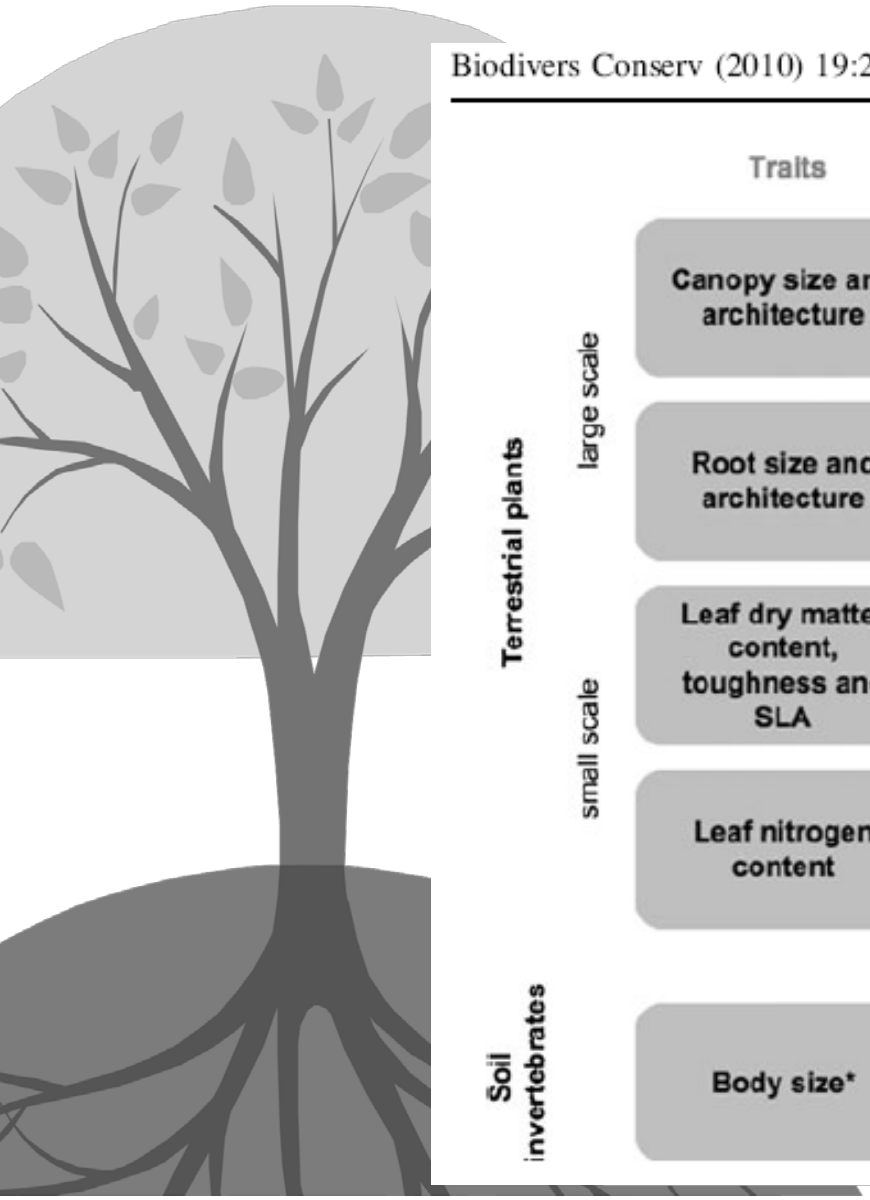
Tree uses
Firewood
Fodder
Food
Medicinal (humans)
Medicinal (animals)
Timber
Fences

Tree functions
Soil formation
Drought tolerance
Stream protection
Biodiversity hosting
Cultural (Mali)
SHADE

These classifications are regarding to tree attributes
Height
Canopy phenology
Crown openness
Leaf size
Leaf thickness
Root abundance

Example from Nicaragua:		
Shade (pastures)	Narrow crown, deciduous	Guanacaste, Genizaro, Guacimo, Acacia, Jicaro
Wind protection	Tall tree, dense crown, deep roots	Guanacaste, Eucalipto, Mango, Espavel, Pochote, Jabillo

Most common tree attributes related to ecosystem functions



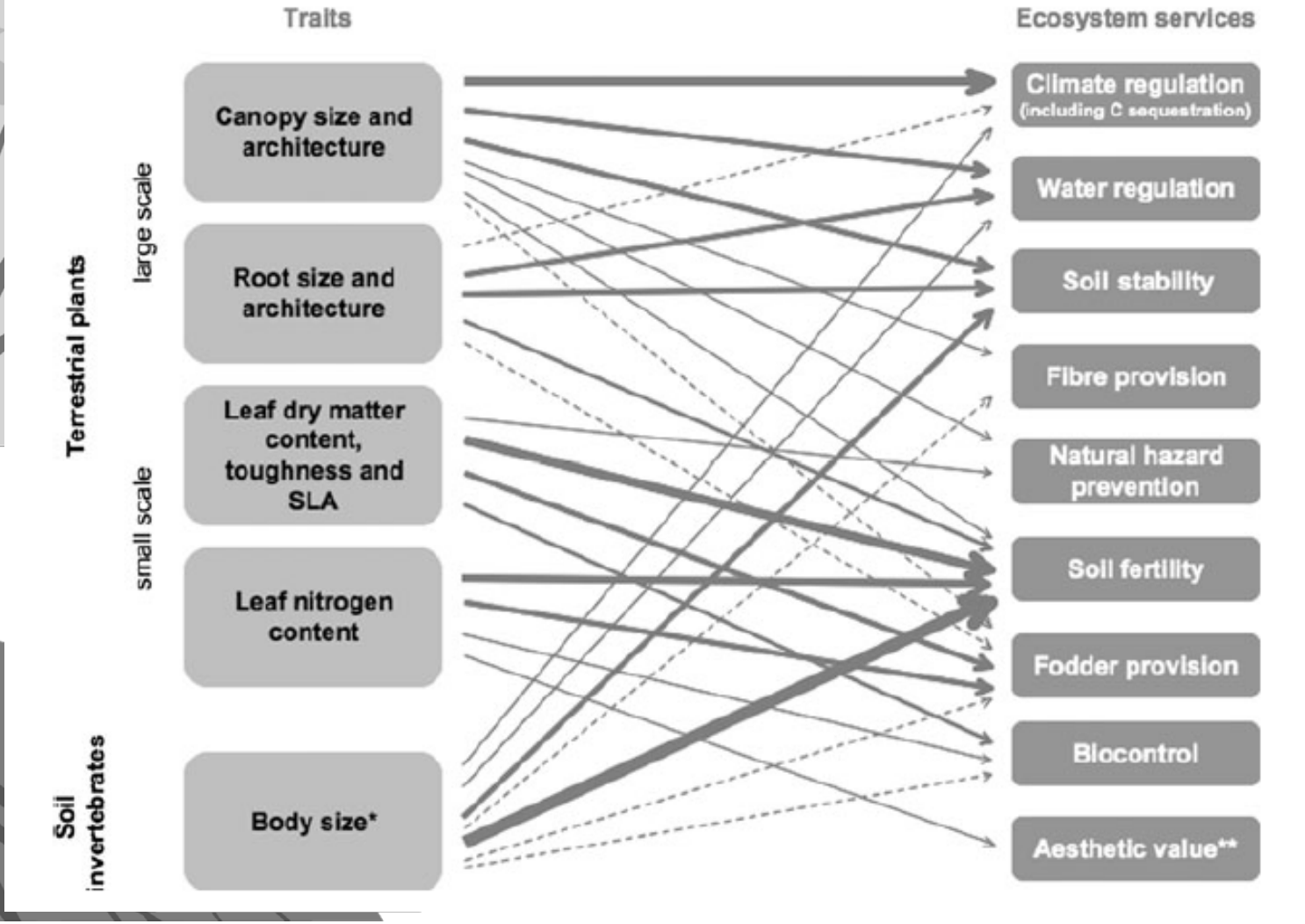
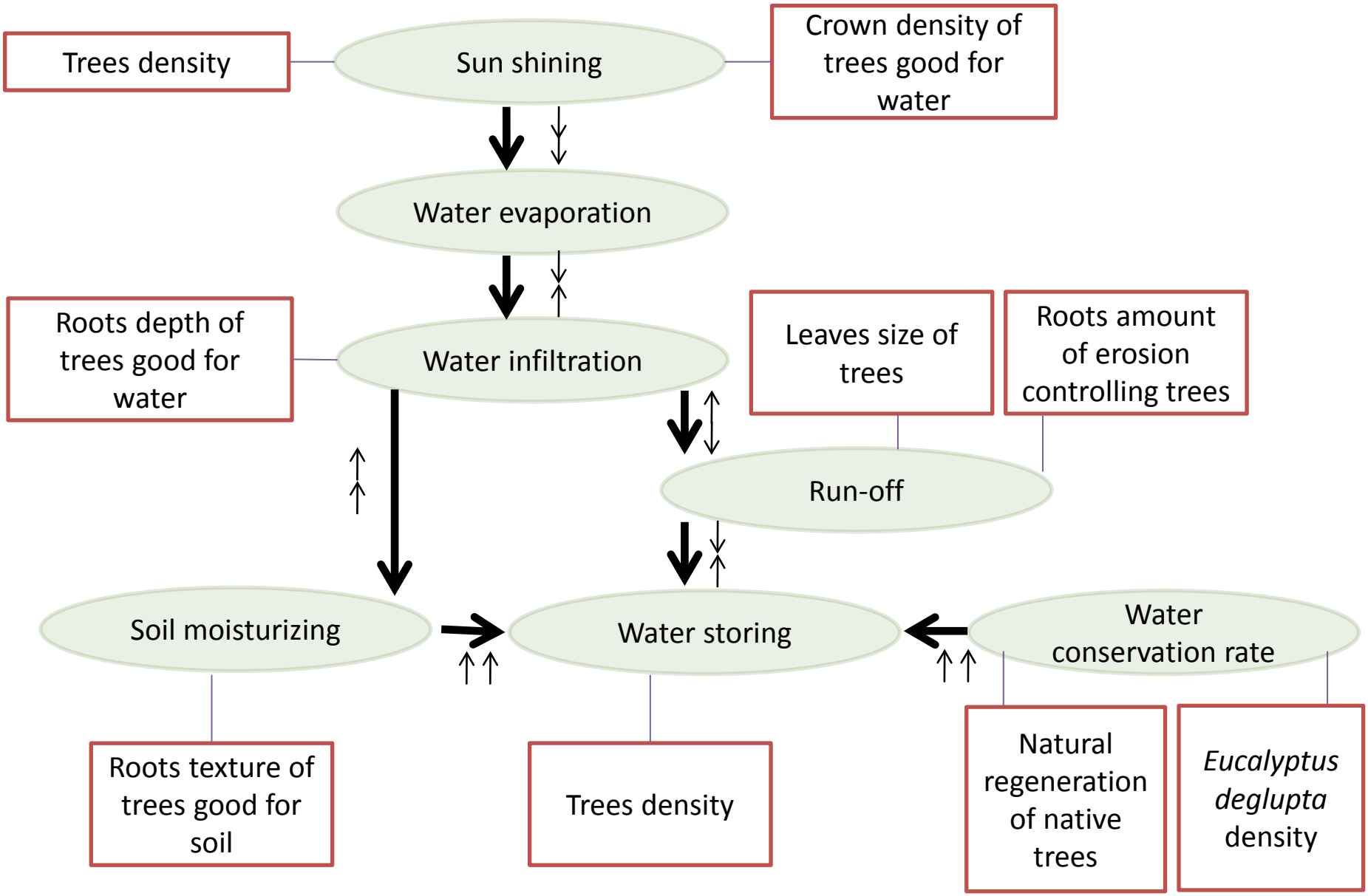


Illustration from Cerdan (2012), inspired by De Bello *et al* (2010)



Complex (Nicaraguan) farmers' knowledge related to the relation among trees and water

Outline

- Why did FUNCiTREE study local knowledge?
- How did FUNCiTREE study local knowledge?
- What are the main results FUNCiTREE found?
- **How useful (or not) results actually are?**

Utility of the results for FUNCiTREE

- **WP3 Farmers perception of AFS tree species and their traits**
  - Task 3.2 Local knowledge of species traits (use of AKT) ✓
- **WP2**
  - What are the critical ecosystem functions that farmers desire? ✓
  - What are farmers hoping to get out of AFS implemented on their farms? X
  - Task 2.1 Farmers production goals (Community capitals framework) ✓
- **WP6**
  - Task 6.4 Causal network using Bayesian belief network to determine cause-effect relationships with predictive models ✓
- **WP5** Cross regional analysis of Species, traits and classifications +-

Utility of the results for us

How much multiple ecosystem services are important to farmers? (Sean)

Guasimo greather than Jicaro as fodder, shading livestock, interacting with pasture (Marcel)

Can we relate physiological traits (Scientifics) to agroforestry functions (farmers)? (Philippe)

How can be local knowledge better used (IPBES)? (Nina Vik)

Examples of synthesis of local and scientific knowledge (Hubert)

Shape, size and density of crown in forage Species (Hubert)

Integration of local knowledge in agroforestry engineering (Alexandre presented and Mariel asked how to do it)


Thank you !
ccerdan@uv.mx
http://akt.bangor.ac.uk